

The data in a text file is properly formatted for GRAPH IT! if there is only one item of data per line. Therefore, you can use virtually any word processor that accepts standard text files to create and edit data files. To give you a feeling for how this works, load the supplied text file into your word processor and look at how the row and column names are organized with respect to the items of numeric data.

Creating a GRAPH IT! File with a Text File

Move the pointer to the FILE menu, click on it and drag down until Open... is highlighted. Release the mouse button. A sub-menu will appear asking whether you want to open a GRAPH IT! Data File or an AppleWorks Text File. Move the pointer to highlight the AppleWorks Text File and click on it.

The File Selector Dialog Box will appear as shown below. If you are familiar with the MacIntosh or the IIGS Quick Launcher, then you already know how to operate the File Selector Dialog Box.

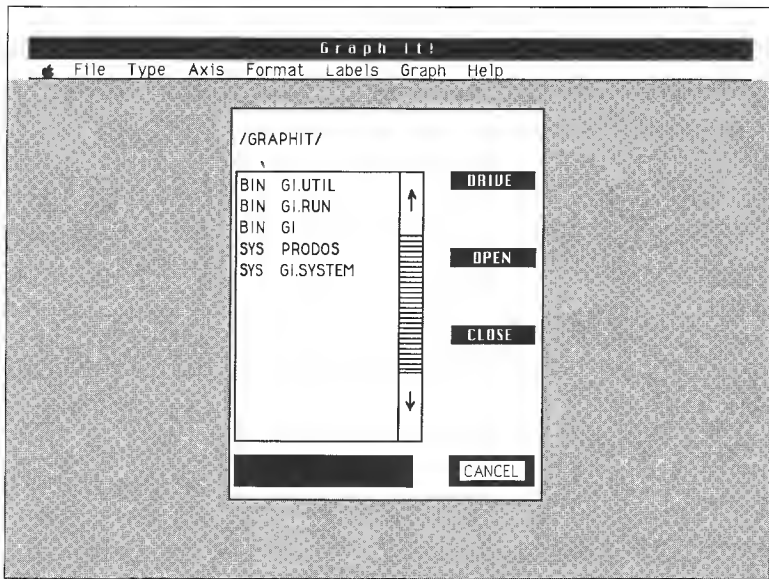


Figure 13

At the top of this box is the Prefix Line. The first item is the Volume Name. It is followed by the sub-directory, if one exists.

Directly beneath the Prefix is a window with the files contained in the currently displayed Volume or sub-directory. If there are more than thirteen files, they will not fit in the window. Click on the Scroll Bar Arrows to page through the files one window at a time.

Click on DRIVE to read the directory of another drive. You may have to click on the button more than once to read the drive that you want since it will cycle through the devices in sequence. The Prefix Line will display what device is currently being read.

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To view the files in a sub-directory, click on the sub-directory to select it and then click on OPEN, or double click on the sub-directory name. To exit the sub-directory, click on CLOSE.

To open a file, click on the file name and click on OPEN. You can also open a file by double clicking on it. Click on CANCEL to exit this option without opening a file.

Once you select a text file, the Specify Size Dialog Box appears on the screen. Just as in opening a file for manual data entry, you must specify how many rows and columns the file is to contain.

Because this is a text file with rows and columns already existing, the number of rows and columns specified in the dialog box *must exactly* match the number of rows and columns in the text file. Otherwise, you will see an error message, and the operation will stop. Click on CONTINUE to acknowledge the error message, and you will return to the opening screen format.

After you indicate the number of rows and columns correctly, move the pointer to ACCEPT and click. The Data Display Window returns to your screen.

If you included Legend and Category names as part of your text file, you are ready to begin graphing your data. If not, click on those lines and enter the names.

Choosing a Graph Type

The most appropriate graph type for a given set of data is decided by a number of factors. Basically, these are in the nature of the selected data itself: Tightly packed vs. widely spread numbers, single range vs. multiple ranges and large number of cells selected vs. a small number of cells selected are some considerations.

Each type of graph lends itself to certain characteristics in the data. Frequently, the same data may be effectively charted with any one of several graph types. Of course, your own personal preference, based upon your experience and tastes, is essential.

The Nature of Your Data

Data is simply a group of numbers that you wish to graphically represent. The nature of your data (or “type” of data) is simply the numeric characteristics of the data. The chart below provides general guidelines as to which types of charts lend themselves to which types of data. Keep in mind that these are rules of thumb. Don’t be afraid to experiment!

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Type of Chart \ Type of Data	Advancing or Declining	Scattered	Tightly Packed (Normalized)	Single or Few Ranges	Many Ranges	Relative Comparison	Trend Analysis
Column	X	X	X	X	X	X	X
Stacked							
Column	X	X	X	X		X	X
Bar	X	X	X	X		X	
Line	X		X	X			X
Line/Column	X		X	X			
Scatter		X		X			X
Area	X			X		X	
3-D	X		X	X	X	X	X
Pie	X	X	X	X		X	

Figure 14

Here are brief descriptions of the different types of data:

Advancing or Declining Data—Many types of data tend to increase or decrease with time. Examples of this would be cumulative totals, the price of bread or a declining loan balance. A chart of this type of data is useful in visually seeing what the rate of change is. If the slope or steepness of the graph is great, then the data is changing quickly.

Scattered Data—Scattered data is random in nature, like a series of dice throws or a list of measurements that vary over a wide range of values. Scattered data doesn't lend itself to easily recognizable trends. For large amounts of scattered data, however, a "clustering" effect (due to the laws of probability) may be apparent.

Tightly Packed Data—Any data may be tightly “packed.” This simply means that the difference between the minimum and maximum values is quite small. Examples of this type of data would be human body temperatures, the difference in the measurements of precision-made parts and values changing very slowly with time (like plant growth per minute).

Tightly packed data must be “normalized” to recognize trends. Normalizing data means treating the minimum value as zero and subtracting the minimum value from all other data values. This causes the minimum to maximum spread of the data to be graphed with full resolution. If the length of a hair was recorded each hour for 24 hours, a graph of the data would look quite flat and unrevealing. After normalizing, however, the graph would clearly show variations in the growth rate from hour to hour.

Single or Few Versus Many Data Ranges—There are really two aspects to this data type. One is simply a few data points versus a lot of data points. The other is how many ranges of data there are.

If you had quarterly sales for one salesman, you would have one range of four values—not much data. If you had 25 years worth of quarterly sales data, however, you would have 100 values. You would still only have one range of data, but 100 is a significant amount of data.

If, on the other hand, you had quarterly sales data for ten salesmen for one year, you would have ten ranges of four values for a total of forty data values. Track those salesmen for ten years, and you'd have ten ranges of forty values for a total of 400 values—a significant number of ranges as well as a large number of total values.

Relative Comparison vs. Trend Analysis—Sometimes you'll be more interested in the relative size or magnitude of adjacent data values rather than in the trend of a large amount of data.

An example of this is our salesman. A graph of one year's worth of data would show clearly the relative difference between sales in the third and fourth quarters due to Christmas buying. You would have to plot several years' worth of data, however, to recognize consistent long-term trends.

The Appendix contains a complete listing of all GRAPH IT! types available along with a picture of each.

Choosing the Display Characteristics of Your Graph

GRAPH IT! gives you almost complete control over how your graph looks. You can add titles, move them around, vary the display of category groupings, alter the scaling of data and more. To give you an idea of just how much control you have, load `SAMPLE.DATA` from your program disk.

Now, put the pointer on the **GRAPH** menu, click on it and drag down until **Erase Defaults** is highlighted. Release the mouse button. Move to the **GRAPH** menu again and select **Graph**. In a few seconds your data will be graphed, but that's all that will appear. This graph doesn't tell you much, does it?

To put all the missing elements back, select **Restore Defaults** at the bottom of the **GRAPH** menu. You can do this using the Quick Keys **(F) (R)**. Select **Graph** again from the **GRAPH** menu (Quick Keys **(F) (G)**), and you'll see a much more complete picture. A listing of **GRAPH IT!**'s default settings is shown in Chapter 5 in the **Restore Defaults** option of the **GRAPH** menu. Now let's spend a little time learning how to customize your graph.

■ Working with Labels

Four key elements to your graph are all controlled through the LABELS menu. They are: The title of your graph, the X- and Y-axis labels and the Legend display. These elements are the ones which really tell someone viewing a graph what they're looking at.

Title: This is where you describe what the graph is about, whether it's the Sales and Profit History of Mycompany, Average Annual Rainfall in Arizona or The Smith Family Portfolio. By selecting the Edit Title... option from the LABELS menu, you can enter any combination of letters, numbers and spaces up to a maximum of 42 characters. After entering the title, press **RETURN**. If you are making changes from a previously entered title, any characters to the right of the cursor are ignored.

You also have the option of displaying your title at the top or bottom of your graph, centered or left justified. You make these choices by selecting Position Title... in the LABELS menu and clicking on the appropriate choice in the sub-menu which appears. You can even choose not to display the title at all. Just select Display Title from the LABELS menu to toggle the option off.

X- and Y-Axis: These labels describe the information in the graph. The X-Axis label describes the information on the horizontal plane of the graph. Unless you choose Swap Axis from the AXIS menu, this will be the Categories of your data; most often these will be measures of time, whether monthly, quarterly or yearly.

The Y-Axis of your graph always represents the numerical scale, so the label should describe or define the units of measure, whether it's in Thousands of Dollars, Hundreds of Bushels, Number of Inches or whatever. To enter the X- or Y-Axis title, simply select the appropriate option from the LABELS menu, type in the information, up to twenty characters maximum, and press **RETURN**. As with the title, you can also choose not to display one or both of the Axis labels by clicking on Display X-Axis or Display Y-Axis in the LABELS menu.

Legend: GRAPH IT! gives you three options regarding the display of legend information—you can choose to exclude it, you can choose whether or not you want to have a border around it and you can position it top, bottom, right or left in your graph. To change the position of the Legend display, select Legend Position... in the LABELS menu and click on your choice in the sub-menu.

■ Providing Visual Reference Points

Several options in both the FORMAT and AXIS menus help you guide the eye of someone viewing your graph. They can also help keep your graph from becoming too "cluttered." Here is a brief introduction to the various options. Experiment on your own to fully explore them.